

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-336783

(43)Date of publication of application : 07.12.2001

(51)Int.Cl.

F24F 1/00

F24F 13/06

(21)Application number : 2000-159862

(71)Applicant : MATSUSHITA REFRIG CO LTD

(22)Date of filing : 30.05.2000

(72)Inventor : IEMURA TETSUYA

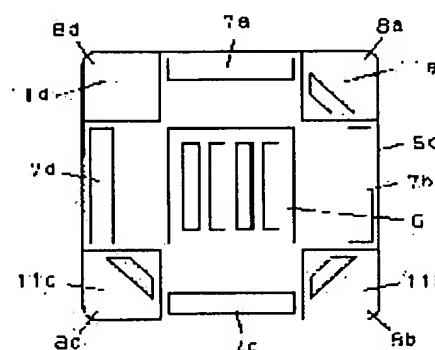
## (54) AIR CONDITIONER

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To eliminate a dead zone by allowing a cold or warm air to flow in directions of four corners of a decorative panel in a ceiling installed type air conditioner.

**SOLUTION:** The air conditioner comprises an indoor unit 1a having body air outlets 4a to 4d and 9a to 9d provided on an outer periphery of a housing to diffuse indoor air sucked by a blower 3 and heat exchanged by a heat exchanger 2, and the decorative panel 5c of a substantially rectangular shape provided on a lower surface of the unit 1a and having a suction port 6 formed at a center, panel air outlets 7a to 7d of main flows formed at four sides of a periphery and any covers of a cover 11d not having the panel air outlet of a sub-flow and covers 11a to 11c having the panel air outlets of the sub-flows detachably mounted at four corners 8a to 8d. Thus, the cold or warm air can flow from the corners 8a to 8d for mounting the covers 11a to 11c having the panel air outlets of the sub-flows.

5c 化粧パネル  
11a、11b、11c 着脱自在な副流の吹き出し口があるカバー  
11d 着脱自在な副流の吹き出し口がないカバー



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[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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**CLAIMS**

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[Claim(s)]

[Claim 1] The air conditioner which consists of an interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which was inhaled by the blower and heat exchange was carried out by the heat exchanger, and a makeup panel of the abbreviation square with which it was prepared in the underside of said interior unit, and the panel outlet of sub\*\* was formed in the center section at inlet port, the mainstream respectively panel outlet to four sides of a perimeter, and the four corner sections, respectively.

[Claim 2] The air conditioner which consists of an interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which was inhaled by the blower and heat exchange was carried out by the heat exchanger, and a makeup panel of the abbreviation square with which it was prepared in the underside of said interior unit, and the panel outlet of sub\*\* was formed in the center section at at most three corner sections, respectively among inlet port, the mainstream respectively panel outlet to four sides of a perimeter, and the four corner sections.

[Claim 3] The air conditioner which consists of a makeup panel of the abbreviation square with which one of coverings of covering with the panel outlet of the interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which was inhaled by the blower and heat exchange was carried out by the heat exchanger, covering which it is prepared in the underside of said interior unit, and inlet port and the mainstream respectively panel outlet to four sides of a perimeter be formed in a center section, and do have the panel outlet of sub\*\* in the four corner sections, or sub\*\* be attached free [ attachment and detachment ].

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the air conditioner of ceiling installation types, such as a head-lining embedded type and a head-lining hanging type.

[0002]

[Description of the Prior Art] Although the air conditioner of ceiling installation types, such as a head-lining embedded type which performs an air conditioning by also setting a store at ordinary homes from the first, direct-heating indoor air and cooling, and a head-lining hanging method, is spreading in recent years, the so-called air conditioner of four-direction blow off which equipped the makeup panel of an abbreviation square with four outlets especially is the most common.

[0003] There are some which are shown in JP,4-22203,Y as a conventional air conditioner.

[0004] Hereafter, the above-mentioned conventional air conditioner is explained, referring to a drawing.

[0005] Drawing 6 is the bottom view of the interior unit of the conventional air conditioner.

Drawing 7 is drawing of longitudinal section of the interior unit of the conventional air conditioner. Drawing 8 is the top view of the makeup panel of the conventional air conditioner.

[0006] In drawing 6 and drawing 7, 1 is the interior unit of the air conditioner embedded in the indoor head-lining side. The heat exchanger to which 2 performs heat exchange between a refrigerant and indoor air, the blower with which 3 ventilates a heat exchanger 2, and 4a-4d are body outlets which blow off the air cooled or heated by the heat exchanger 2.

[0007] Moreover, in drawing 8, the inlet port which the makeup panel by which 5 was prepared in the underside of an interior unit 1, and 6 are constituted by the filter etc., and inhales indoor air inside an interior unit 1 with a blower 3, the panel outlet which blows off the air which blows off from the body outlets 4a-4d of an interior unit 7a-7d, and which was cooled or heated indoors, and 8a-8d are the corner sections of the makeup panel 5.

[0008] About the air conditioner constituted as mentioned above, the actuation is explained below.

[0009] First, if cooling operation and heating operation are started by the air conditioner, indoor air will be inhaled from inlet port 6 by the blower 3. Furthermore, the cold blast and warm air which were heated by the heat exchanger 2 blow off from the body outlets 4a-4d to the interior of a room through the panel outlets 7a-7d.

[0010]

[Problem(s) to be Solved by the Invention] However, since [ to which the above-mentioned conventional air conditioner equipped the makeup panel of an abbreviation square with four outlets ] it is the so-called air conditioner of four-direction blow off, From it being the configuration that the body outlets 4a-4d were formed in four sides around an interior unit 1, and the panel outlets 7a-7d were formed in four sides around the makeup panel 5 It became the Dead Zone of the blow-off airstream to which the corner sections 8a-8d of the makeup panel 5 blow off from the panel outlets 7a-7d, blow-off airstream could not flow easily in the corner sections [ of the makeup panel 5 / 8a-8d ] direction, and there was a fault that comfortable air conditioning was unrealizable.

[0011] This invention solves the conventional technical problem and aims at offering the air conditioner which can blow off also in the direction of the corner section of a makeup panel.

[0012]

[Means for Solving the Problem] Invention of the air conditioner of this invention according to claim 1 The interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which was inhaled by the blower and heat exchange was carried out by the heat exchanger, It is prepared in the underside of said interior unit. The mainstream respectively panel outlet to four sides of inlet port and a perimeter in the center section, Since blow-off airstream flows from the panel outlet of sub\*\* which consisted of makeup panels of the abbreviation square with which the panel outlet of sub\*\* was formed in the four corner sections, respectively, and was formed in the corner section of a makeup panel It has an operation that cold blast and warm air can be passed to the habitation region field of the direction of the four

corner sections of a makeup panel.

[0013] Moreover, the interior unit in this invention can be obtained by preparing a body outlet in the corner section of the interior unit of the air conditioner of the conventional general four-direction blow off further. Moreover, the makeup panel in this invention can be obtained by preparing a panel outlet in the corner section of the makeup panel of the air conditioner of the conventional general four-direction blow off further. Except the corner section, the shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose, and it has an operation of not spoiling the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side.

[0014] Moreover, the interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which invention of an air conditioner according to claim 2 was absorbed by the blower, and heat exchange was carried out by the heat exchanger, It is prepared in the underside of said interior unit. The mainstream respectively panel outlet to four sides of inlet port and a perimeter in the center section, It constitutes from a makeup panel of the abbreviation square with which the panel outlet of sub\*\* was formed in at most three corner sections among the four corner sections, respectively. Since blow-off airstream flows from the panel outlet of sub\*\* formed in the corner section of a makeup panel, it has an operation that cold blast and warm air can be passed to the habitation region field which needs to pass the blow-off airstream of the direction of a maximum of the three corner sections among the four corner sections of a makeup panel.

[0015] Moreover, by making it not form the panel outlet of sub\*\* in the corner section of the makeup panel of the direction where blow-off airstream cannot flow easily compared with other corner sections due to the convenience on the configuration of a heat exchanger from the beginning, when the blow-off airstream from the panel outlet of specific sub\*\* is weak, it has an operation of not giving a user the excessive dissatisfaction.

[0016] Moreover, while losing useless air conditioning by installing a makeup panel in accordance with the direction which does not have the need of passing blow-off airstream by the relation between the installation environment of an air conditioner, or a habitation region field, in the direction of the corner section of a makeup panel without the panel outlet of sub\*\*, it has an operation that blow-off airstream can be passed effective in the habitation region field which needs to pass blow-off airstream for the part which lost the panel outlet of sub\*\*.

[0017] Moreover, the interior unit in this invention can be obtained by preparing a body outlet in the corner section of the interior unit of the air conditioner of the conventional general four-direction blow off further. Moreover, the makeup panel in this invention can be obtained by preparing a panel outlet in the corner section of the makeup panel of the air conditioner of the conventional general four-direction blow off further. Except the corner section, the shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose, and it has an operation of not spoiling the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side.

[0018] Moreover, the interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which invention of an air conditioner according to claim 3 was absorbed by the blower, and heat exchange was carried out by the heat exchanger, It is prepared in the underside of said interior unit, and a mainstream respectively panel outlet is formed in a center section at four sides of inlet port and a perimeter. It constitutes from a makeup panel of the abbreviation square with which one of coverings of covering with the panel outlet of covering which does not have the panel outlet of sub\*\* in the four corner sections, or sub\*\* are attached free [ attachment and detachment ]. In addition to an operation of invention of claim 2, each of the four corner sections of a makeup panel is received. The panel outlet of whether the panel outlet of sub\*\* is prepared, that selection which is not prepared, modification, and sub\*\* can be fluctuated easily, and it has an operation that it can respond also to the air conditioning load effect by change of the habitation region environment after installation of an air conditioner, and seasonal change flexibly.

[0019]

[Embodiment of the Invention] Hereafter, the gestalt of operation of the air conditioner by this

invention is explained, referring to a drawing. In addition, about the same configuration as the former, the same sign is attached and detailed explanation is omitted.

[0020] (Gestalt 1 of operation) Drawing 1 is the bottom view of the interior unit of the air conditioner by the gestalt 1 of operation of this invention. Drawing 2 is drawing of longitudinal section of the interior unit of the air conditioner of the gestalt of this operation. Drawing 3 is the top view of the makeup panel of the air conditioner of the gestalt of this operation.

[0021] In drawing 1 and drawing 2, 1a is the interior unit equipped with at least one or more body outlets 4a-4d which built in the blower 3 and the heat exchanger 2 and were prepared in the periphery of a case, and body outlets 9a-9d.

[0022] Although the body outlets 9a-9d are further added to the body outlets 4a-4d prepared in interior unit 1a and it is two or more need preferably At least one among the body outlets 9a-9d cannot be prepared if needed. The body outlets 4a-4d and the body outlets 9a-9d are connected. Moreover, prepare one body outlet or At least one among the body outlets 9a-9d can be prepared and closed, and it can prepare other body outlets 9a-9d, at least one body outlet which connected the body outlets 4a-4d, and at least one closure section.

[0023] Moreover, it is the makeup panel of the abbreviation square with which 5a was prepared in the underside of interior unit 1a in drawing 3. 6 is inlet port prepared in the center section of makeup panel 5a of an abbreviation square. 7a-7d are the mainstream panel outlets prepared in four sides around makeup panel 5a of an abbreviation square. 8a-8d are the four corner sections of makeup panel 5a, and 10a-10d are the panel outlets of sub\*\* prepared in the four corner sections 8a-8d of makeup panel 5a of an abbreviation square.

[0024] The panel outlets 10a-10d of sub\*\* are further added to the mainstream panel outlets 7a-7d prepared in four sides around makeup panel 5a of an abbreviation square.

[0025] About the air conditioner constituted as mentioned above, the actuation is explained below.

[0026] First, if cooling operation and heating operation are started by the air conditioner, indoor air will be inhaled from inlet port 6 by the blower 3. Furthermore, the cold blast and warm air which were heated by the heat exchanger 2 not only blow off to the interior of a room, but blow off from the body outlets 9a-9d to the interior of a room through the panel outlets 10a-10d of sub\*\* through the mainstream panel outlets 7a-7d from the body outlets 4a-4d.

[0027] Interior unit 1a forms the body outlets 9a-9d in the corner section of the interior unit of the air conditioner of four-direction blow off of the so-called former which equipped the makeup panel of the most common abbreviation square with four outlets further here. In order that makeup panel 5a may form the panel outlets 10a-10d of sub\*\* in the corner section of the makeup panel of the conventional air conditioner further, moreover, interior unit 1a and makeup panel 5a Except corner section 8a-8d, the shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose. Without spoiling the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side in addition -- and since blow-off airstream flows from the panel outlets 10a-10d of four sub\*\* with which the four corner sections 8a-8d of makeup panel 5a were equipped, cold blast and warm air can be passed to the habitation region field of a corner sections [ of makeup panel 5a / 8a-8d ] direction.

[0028] Interior unit 1a which equipped the periphery of a case with the body outlets 4a-4d which blow off the indoor air in which the air conditioner of the gestalt of this operation was absorbed by the blower 3, and heat exchange was carried out by the heat exchanger 2, and 9a-9d as mentioned above, It is prepared in the underside of interior unit 1a. The mainstream respectively panel outlets 7a-7d to four sides of inlet port 6 and a perimeter in the center section, It constitutes from makeup panel 5a of the abbreviation square with which the panel outlets 10a-10d of sub\*\* were formed in the four corner sections 8a-8d, respectively. Since blow-off airstream flows from the panel outlets 10a-10d of sub\*\* formed in the corner sections 8a-8d of makeup panel 5a, cold blast and warm air can be passed to the habitation region field of the direction of the four corner sections 8a-8d of makeup panel 5a.

[0029] Moreover, interior unit 1a in the gestalt of this operation can be obtained by forming the body outlets 9a-9d in the corner section of the interior unit of the air conditioner of the

conventional general four-direction blow off further. Moreover, makeup panel 5a in the gestalt of this operation It can obtain by forming the panel outlets 10a-10d in the corner sections 8a-8d of the makeup panel of the air conditioner of the conventional general four-direction blow off further. Except the corner section The shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose, and the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side is not spoiled.

[0030] (Gestalt 2 of operation) The gestalt 2 of operation of the air conditioner by this invention is explained hereafter, referring to a drawing. In addition, about the same configuration as the gestalt 1 of the former and operation, the same sign is attached and detailed explanation is omitted.

[0031] The configuration of the interior unit in the gestalt of this operation is the same as that of the interior unit in the gestalt 1 of operation shown in drawing 1 R> 1 and drawing 2 . Drawing 4 is the top view of the makeup panel of the air conditioner by the gestalt 2 of operation of this invention.

[0032] It is the makeup panel of the abbreviation square with which 5b was prepared in the underside of interior unit 1a in drawing 4 . 6 is inlet port prepared in the center section of makeup panel 5b of an abbreviation square. 7a-7d are the mainstream panel outlets prepared in four sides around makeup panel 5b of an abbreviation square, and 10a-10c are the panel outlets of sub\*\* prepared in the corner sections 8a-8c of makeup panel 5b of an abbreviation square. At least one (example of this drawing 4 three) addition of the panel outlets 10a-10c of sub\*\* is carried out further at the mainstream panel outlets 7a-7d prepared in four sides around makeup panel 5b of an abbreviation square.

[0033] About the air conditioner constituted as mentioned above, the actuation is explained below.

[0034] First, if cooling operation and heating operation are started by the air conditioner, indoor air will be inhaled from inlet port 6 by the blower 3. Furthermore, although the cold blast and warm air which were heated by the heat exchanger 2 not only blow off to the interior of a room, but blow off from the body outlets 4a-4d to the interior of a room through the panel outlets 10a-10c of the body outlets 9a-9c to sub\*\* through the mainstream panel outlets 7a-7d Since blow-off airstream does not flow from 8d of corner sections without the panel outlet of sub\*\*, interior unit 1a and makeup panel 5b Except corner section 8a-8d, the shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose. without it spoils the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side -- in addition -- and, since there is no panel outlet of sub\*\* among the four corner sections 8a-8d of makeup panel 5b in at least one corner section Neither cold blast nor warm air can flow to an unnecessary habitation region field among corner sections [ of makeup panel 5b / 8a-8d ] directions, but cold blast and warm air can pass to a required habitation region field from the panel outlet of sub\*\* with which other corner sections were equipped.

[0035] Interior unit 1a which equipped the periphery of a case with the body outlets 4a-4d which blow off the indoor air in which the air conditioner of the gestalt of this operation was absorbed by the blower 3, and heat exchange was carried out by the heat exchanger 2, and 9a-9c as mentioned above, It is prepared in the underside of interior unit 1a. The mainstream respectively panel outlets 7a-7d to four sides of inlet port 6 and a perimeter in the center section, It constitutes from makeup panel 5b of the abbreviation square with which the panel outlets 10a-10c of sub\*\* were formed in corner 3 [ 8a-8c ] of the four corner sections 8a-8d, respectively. Since blow-off airstream flows from the panel outlets 10a-10c of sub\*\* formed in the three corner sections 8a-8c of makeup panel 5b Cold blast and warm air can be passed to the habitation region field which needs to pass the blow-off airstream of the direction of the three corner sections 8a-8c among the four corner sections 8a-8d of makeup panel 5b.

[0036] Moreover, by making it not form the panel outlet of sub\*\* in 8d of corner sections of makeup panel 5b of the direction where blow-off airstream cannot flow easily compared with other corner sections 8a-8c due to the convenience on the configuration of a heat exchanger 2

from the beginning, if the blow-off airstream from the panel outlet of specific sub\*\* is weak, the excessive dissatisfaction will not be given to a user.

[0037] Moreover, while losing useless air conditioning by installing makeup panel 5b in accordance with the direction which does not have the need of passing blow-off airstream by the relation between the installation environment of an air conditioner, or a habitation region field, in the direction which is 8d of corner sections of makeup panel 5b without the panel outlet of sub\*\*, blow-off airstream can be passed effective in the habitation region field which needs to pass blow-off airstream for the part which lost the panel outlet of sub\*\*.

[0038] Moreover, interior unit 1a in the gestalt of this operation can be obtained by forming the body outlets 9a-9d in the corner section of the interior unit of the air conditioner of the conventional general four-direction blow off further. Moreover, makeup panel 5b in the gestalt of this operation It can obtain by forming the panel outlets 10a-10c in the three corner sections 8a-8c of the makeup panel of the air conditioner of the conventional general four-direction blow off further. Except the corner section The shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose, and the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side is not spoiled.

[0039] (Gestalt 3 of operation) The gestalt 3 of operation of the air conditioner by this invention is explained hereafter, referring to a drawing. In addition, about the same configuration as the gestalten 1 and 2 of the former and operation, the same sign is attached and detailed explanation is omitted.

[0040] The configuration of the interior unit in the gestalt of this operation is the same as that of the interior unit in the gestalt 1 of operation shown in drawing 1 R> 1 and drawing 2 . Drawing 5 is the top view of the makeup panel of the air conditioner by the gestalt 3 of operation of this invention.

[0041] In drawing 5 , 5c is the makeup panel of the abbreviation square formed in the underside of interior unit 1a, 6 is inlet port prepared in the center section of makeup panel 5c of an abbreviation square, and 7a-7d are the mainstream panel outlets prepared in four sides around makeup panel 5c of an abbreviation square.

[0042] 11a-11c are coverings with the panel outlet of sub\*\* which can be detached and attached and which was prepared in the corner sections 8a-8c of makeup panel 5c of an abbreviation square, and 11d is covering without the panel outlet of sub\*\* which can be detached and attached and which was prepared in 8d of corner sections of makeup panel 5c of an abbreviation square.

[0043] The coverings 11a-11c with the panel outlet of sub\*\* which can be detached and attached freely At least one is further added to the mainstream panel outlets 7a-7d prepared in four sides around makeup panel 5c of an abbreviation square. Covering 11d without the panel outlet of sub\*\* which can be detached and attached freely, at least one is further added to the mainstream panel outlets 7a-7d prepared in four sides around makeup panel 5c of an abbreviation square.

[0044] About the air conditioner constituted as mentioned above, the actuation is explained below.

[0045] First, if cooling operation and heating operation are started by the air conditioner, indoor air will be inhaled from inlet port 6 by the blower 3. Furthermore, the cold blast and warm air which were heated by the heat exchanger 2 blow off from the body outlets 4a-4d to the interior of a room through the coverings 11a-11c which it not only blows off to the interior of a room, but have the panel outlet of sub\*\* which can be freely detached and attached from the body outlets 9a-9c through the mainstream panel outlets 7a-7d.

[0046] At this time, blow-off airstream does not flow from 8d of corner sections in which covering 11d without the panel outlet of sub\*\* which can be detached and attached freely was prepared.

[0047] Interior unit 1a and makeup panel 5c except corner section 8a-8d Without spoiling the versatility of the construction side which can make the shape of an air conditioner and a basic form of four-direction blow off of the former serve a double purpose, and the air conditioner of



four-direction blow off of the former has, or a design side in addition -- and in the unnecessary habitation region field of temperature control among the four corner sections 8a-8d of makeup panel 5c By attaching covering 11d without the panel outlet of sub\*\* which can be detached and attached freely Neither cold blast nor warm air is passed. Among the four corner sections 8a-8d of makeup panel 5c in the required habitation region field of temperature control By attaching the coverings 11a-11c with the panel outlet of sub\*\* which can be detached and attached freely, cold blast and warm air can be passed, and according to the load effect of a habitation region field, it can change free [ attachment and detachment ], can winnow, and can be made possible.

[0048] Interior unit 1a which equipped the periphery of a case with the body outlets 4a-4d which blow off the indoor air in which the air conditioner of the gestalt of this operation was absorbed by the blower 3, and heat exchange was carried out by the heat exchanger 2, and 9a-9d as mentioned above, It is prepared in the underside of interior unit 1a, and inlet port 6 and the mainstream respectively panel outlets 7a-7d to four sides of a perimeter are formed in a center section. Constitute from makeup panel 5c of the abbreviation square with which one of coverings of the coverings 11a-11c with the panel outlet of covering 11d which does not have the panel outlet of sub\*\* in the four corner sections 8a-8d, or sub\*\* are attached free [ attachment and detachment ], and it adds to the effectiveness of the gestalt 2 of operation. The panel outlet of whether the panel outlet of sub\*\* is prepared, that selection which is not prepared, modification, and sub\*\* can be easily fluctuated to each of the four corner sections 8a-8d of makeup panel 5c, and it can respond also to the air conditioning load effect by change of the habitation region environment after installation of an air conditioner, and seasonal change flexibly.

[0049]

[Effect of the Invention] The interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which invention according to claim 1 was absorbed by the blower, and heat exchange was carried out by the heat exchanger as explained above, By having been prepared in the underside of said interior unit and having constituted from a makeup panel of the abbreviation square with which the panel outlet of sub\*\* was formed in the center section at inlet port, the mainstream respectively panel outlet to four sides of a perimeter, and the four corner sections, respectively Cold blast and warm air can be passed to the habitation region field of the direction of the four corner sections of a makeup panel.

[0050] Moreover, other than the corner section, the shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose, and it can manufacture by low cost, and can provide for a user cheaply, and the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side is not spoiled.

[0051] Moreover, the interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which invention according to claim 2 was absorbed by the blower, and heat exchange was carried out by the heat exchanger, It is prepared in the underside of said interior unit. The mainstream respectively panel outlet to four sides of inlet port and a perimeter in the center section, By having constituted from a makeup panel of the abbreviation square with which the panel outlet of sub\*\* was formed in at most three corner sections among the four corner sections, respectively Cold blast and warm air can be passed to the habitation region field which needs to pass the blow-off airstream of the direction of a maximum of the three corner sections among the four corner sections of a makeup panel.

[0052] Moreover, by making it not form the panel outlet of sub\*\* in the corner section of the makeup panel of the direction where blow-off airstream cannot flow easily compared with other corner sections due to the convenience on the configuration of a heat exchanger from the beginning, if the blow-off airstream from the panel outlet of specific sub\*\* is weak, the excessive dissatisfaction will not be given to a user.

[0053] Moreover, while losing useless air conditioning by installing a makeup panel in accordance with the direction which does not have the need of passing blow-off airstream by the relation between the installation environment of an air conditioner, or a habitation region field, in the direction of the corner section of a makeup panel without the panel outlet of sub\*\*, blow-off



airstream can be passed effective in the habitation region field which needs to pass blow-off airstream for the part which lost the panel outlet of sub\*\*.

[0054] Moreover, other than the corner section, the shape of an air conditioner and a basic form of four-direction blow off of the former can be made to serve a double purpose, and it can manufacture by low cost, and can provide for a user cheaply, and the versatility of the construction side which the air conditioner of four-direction blow off of the former has, or a design side is not spoiled.

[0055] Moreover, the interior unit which equipped the periphery of a case with the body outlet which blows off the indoor air in which invention according to claim 3 was absorbed by the blower, and heat exchange was carried out by the heat exchanger, It is prepared in the underside of said interior unit, and a mainstream respectively panel outlet is formed in a center section at four sides of inlet port and a perimeter. By having constituted from a makeup panel of the abbreviation square with which one of coverings of covering with the panel outlet of covering which does not have the panel outlet of sub\*\* in the four corner sections, or sub\*\* are attached free [ attachment and detachment ] In addition to the effect of the invention of claim 2, each of the four corner sections of a makeup panel is received. The panel outlet of whether the panel outlet of sub\*\* is prepared, that selection which is not prepared, modification, and sub\*\* can be fluctuated easily, and it can respond also to the air conditioning load effect by change of the habitation region environment after installation of an air conditioner, and seasonal change flexibly.

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**DESCRIPTION OF DRAWINGS**

[Brief Description of the Drawings]

[Drawing 1] The bottom view of the interior unit of the air conditioner by the gestalt 1 of operation of this invention

[Drawing 2] Drawing of longitudinal section of the interior unit of the air conditioner of the gestalt of this operation

[Drawing 3] The top view of the makeup panel of the air conditioner of the gestalt of this operation

[Drawing 4] The top view of the makeup panel of the air conditioner by the gestalt 2 of operation of this invention

[Drawing 5] The top view of the makeup panel of the air conditioner by the gestalt 3 of operation of this invention

[Drawing 6] The bottom view of the interior unit of the conventional air conditioner

[Drawing 7] Drawing of longitudinal section of the interior unit of the air conditioner of \*\*\*\*\*

[Drawing 8] The top view of the makeup panel of the air conditioner of \*\*\*\*\*

[Description of Notations]

1a Interior unit

2 Heat Exchanger

3 Blower

4a, 4b, 4c, 4d Body outlet

5a, 5b, 5c Makeup panel

6 Inlet Port

7a, 7b, 7c, 7d Mainstream panel outlet

9a, 9b, 9c, 9d Body outlet

10a, 10b, 10c, 10d Panel outlet of sub\*\*

11a, 11b, 11c Covering with the outlet of sub\*\*

11d Covering without the outlet of sub\*\*

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[Translation done.]

**\* NOTICES \***

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1.This document has been translated by computer. So the translation may not reflect the original precisely.

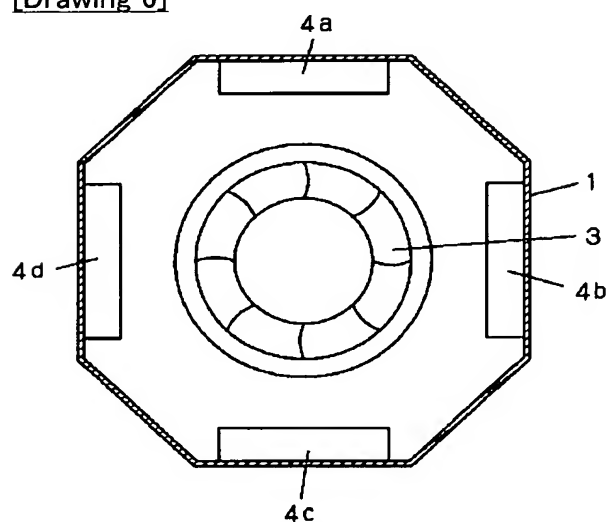
2.\*\*\*\* shows the word which can not be translated.

3.In the drawings, any words are not translated.

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**DRAWINGS**

[Drawing 6]



[Drawing 7]

(19)日本国特許庁 (J P)

(12) 公 開 特 許 公 報 (A)

(11)特許出願公開番号

特開2001-336783

(P2001-336783A)

(43)公開日 平成13年12月7日(2001.12.7)

(51)Int.Cl.<sup>7</sup>

F 2 4 F 1/00  
13/06

識別記号

4 0 1

F I

F 2 4 F 1/00  
13/06

テマコード\*(参考)

4 0 1 C 3 L 0 5 1  
B

審査請求 未請求 請求項の数 3 O L (全 8 頁)

(21)出願番号 特願2000-159862(P2000-159862)

(22)出願日 平成12年5月30日(2000.5.30)

(71)出願人 000004488

松下冷機株式会社

大阪府東大阪市高井田本通4丁目2番5号

(72)発明者 家村 哲也

大阪府東大阪市高井田本通4丁目2番5号

松下冷機株式会社内

(74)代理人 100097445

弁理士 岩橋 文雄 (外2名)

Fターム(参考) 3L051 BG03 BH04

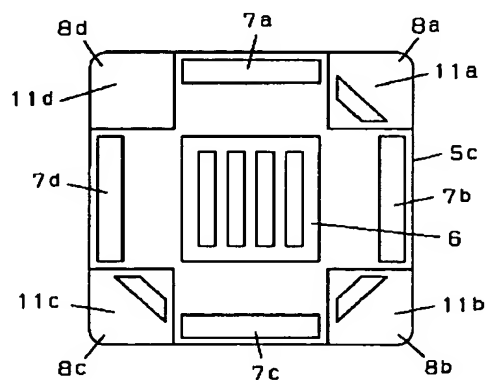
(54)【発明の名称】 空気調和機

(57)【要約】

【課題】 天井設置型の空気調和機において、化粧パネルの4つのコーナー部方向にも冷温風を流し、デッドゾーンをなくす。

【解決手段】 送風機3により吸い込まれ熱交換器2により熱交換された室内空気を吹き出す本体吹出口4a~4d、9a~9dを、筐体の外周に備えた室内機1aと、室内機1aの下面に設けられ、中央部に吸込口6、周囲の4辺にそれぞれ主流のパネル吹出口7a~7dが形成され、4つのコーナー部8a~8dに副流のパネル吹出口がないカバー11dまたは副流のパネル吹出口があるカバー11a~11cのどちらか一方のカバーが着脱自在に取り付けられる略四角形の化粧パネル5cとから構成したので、副流のパネル吹出口があるカバー11a~11cを取り付けたコーナー部8a~8cから冷温風を流すことができる。

5c 化粧パネル  
11a, 11b, 11c 着脱自在な副流の吹出口があるカバー  
11d 着脱自在な副流の吹出口がないカバー



## 【特許請求の範囲】

【請求項1】 送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、

前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口、4つのコーナー部にそれぞれ副流のパネル吹出口が形成された略四角形の化粧パネルとからなる空気調和機。

【請求項2】 送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、

前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口、4つのコーナー部のうち多くとも3つのコーナー部にそれぞれ副流のパネル吹出口が形成された略四角形の化粧パネルとからなる空気調和機。

【請求項3】 送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、

前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口が形成され、4つのコーナー部に副流のパネル吹出口がないカバーまたは副流のパネル吹出口があるカバーのどちらか一方のカバーが着脱自在に取り付けられる略四角形の化粧パネルとからなる空気調和機。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、特に天井埋込式や天井吊り下げ式等の天井設置型の空気調和機に関するものである。

## 【0002】

【従来の技術】近年、店舗はもとより一般家庭においても室内空気を直接加熱、冷却することにより冷暖房を行う天井埋込式や天井吊り下げ方式など天井設置型の空気調和機が普及してきているが、特に略四角形の化粧パネルに4つの吹出口を備えたいわゆる4方向吹出の空気調和機が最も一般的である。

【0003】従来の空気調和機としては、実公平4-22203号公報に示されているものがある。

【0004】以下、図面を参照しながら上記従来の空気調和機を説明する。

【0005】図6は従来の空気調和機の室内機の底面図である。図7は従来の空気調和機の室内機の縦断面図である。図8は、従来の空気調和機の化粧パネルの平面図である。

【0006】図6、図7において、1は室内の天井面に埋め込まれた空気調和機の室内機である。2は冷媒と室内空気との間で熱交換を行う熱交換器、3は熱交換器2に送風する送風機、4a~4dは熱交換器2により冷却または加熱された空気を吹き出す本体吹出口である。

【0007】また、図8において、5は室内機1の下面に設けられた化粧パネル、6はフィルター等により構成され、送風機3により室内の空気を室内機1の内部へ吸い込む吸込口、7a~7dは室内機の本体吹出口4a~4dから吹き出される冷却または加熱された空気を室内に吹き出すパネル吹出口、8a~8dは化粧パネル5のコーナー部である。

【0008】以上のように構成された空気調和機について、以下その動作を説明する。

【0009】まず、空気調和機により冷房運転や暖房運転を開始すると、室内空気が送風機3により吸込口6から吸い込まれる。さらに、熱交換器2により加熱された冷風や温風は、本体吹出口4a~4dからパネル吹出口7a~7dを通じて室内へ吹き出される。

## 【0010】

【発明が解決しようとする課題】しかしながら、上記従来の空気調和機は、略四角形の化粧パネルに4つの吹出口を備えたいわゆる4方向吹出の空気調和機であるため、本体吹出口4a~4dが室内機1の周囲の4辺に設けられ、また、パネル吹出口7a~7dが化粧パネル5の周囲の4辺に設けられた構成であることから、化粧パネル5のコーナー部8a~8dがパネル吹出口7a~7dから吹き出す吹出空気流のデッドゾーンとなってしまう、化粧パネル5のコーナー部8a~8dの方向に吹出空気流が流れにくく、快適な空気調和を実現できないという欠点があった。

【0011】本発明は、従来の課題を解決するもので、化粧パネルのコーナー部の方向にも吹き出すことができる空気調和機を提供することを目的とする。

## 【0012】

【課題を解決するための手段】本発明の請求項1記載の空気調和機の発明は、送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口、4つのコーナー部にそれぞれ副流のパネル吹出口が形成された略四角形の化粧パネルとから構成したものであり、化粧パネルのコーナー部に形成された副流のパネル吹出口から吹出空気流が流れるので、化粧パネルの4つのコーナー部の方向の居住域領域に冷風や温風を流すことができるという作用を有する。

【0013】また、本発明における室内機は、従来の一般的な4方向吹出の空気調和機の室内機のコーナー部にさらに本体吹出口を設けることにより得ることができ、また、本発明における化粧パネルは、従来の一般的な4方向吹出の空気調和機の化粧パネルのコーナー部にさらにパネル吹出口を設けることにより得ることができ、コーナー部以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことがない

という作用を有する。

【0014】また、請求項2記載の空気調和機の発明は、送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口、4つのコーナー部のうち多くとも3つのコーナー部にそれぞれ副流のパネル吹出口が形成された略四角形の化粧パネルとから構成したものであり、化粧パネルのコーナー部に形成された副流のパネル吹出口から吹出空気が流れるので、化粧パネルの4つのコーナー部のうち最大3つのコーナー部の方向の吹出空気を流す必要がある居住域領域に冷風や温風を流すことができるという作用を有する。

【0015】また、熱交換器の構成上の都合で他のコーナー部に比べて吹出空気が流れ難い方向の化粧パネルのコーナー部に、最初から副流のパネル吹出口を形成しないようにすることにより、特定の副流のパネル吹出口からの吹出空気が弱いと利用者に余計な不満を与えることがないという作用を有する。

【0016】また、副流のパネル吹出口がない化粧パネルのコーナー部の方向を、空気調和機の設置環境や居住域領域の関係で吹出空気を流す必要のない方向にあわせて化粧パネルを設置することにより、無駄な空調を無くすとともに、副流のパネル吹出口を無くした分を吹出空気を流す必要がある居住域領域に有効に吹出空気を流すことができるという作用を有する。

【0017】また、本発明における室内機は、従来の一般的な4方向吹出の空気調和機の室内機のコーナー部にさらに本体吹出口を設けることにより得ることができ、また、本発明における化粧パネルは、従来の一般的な4方向吹出の空気調和機の化粧パネルのコーナー部にさらにパネル吹出口を設けることにより得ることができ、コーナー部以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことがないという作用を有する。

【0018】また、請求項3記載の空気調和機の発明は、送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口が形成され、4つのコーナー部に副流のパネル吹出口がないカバーまたは副流のパネル吹出口があるカバーのどちらか一方のカバーが着脱自在に取り付けられる略四角形の化粧パネルとから構成したものであり、請求項2の発明の作用に加え、化粧パネルの4つのコーナー部のそれぞれに対し、副流のパネル吹出口を設けるか設けないかの選択、変更、副流のパネル吹出口の増減が容易に行え、空気調和機の設置後の居住域環境の変化、季節の変化によ

る空調負荷変動にも柔軟に対応できるという作用を有する。

【0019】

【発明の実施の形態】以下、本発明による空気調和機の実施の形態について、図面を参照しながら説明する。なお、従来と同一構成については、同一符号を付して詳細な説明を省略する。

【0020】（実施の形態1）図1は、本発明の実施の形態1による空気調和機の室内機の底面図である。図2は、同実施の形態の空気調和機の室内機の縦断面図である。図3は、同実施の形態の空気調和機の化粧パネルの平面図である。

【0021】図1、図2において、1aは、送風機3と熱交換器2とを内蔵し、筐体の外周に設けられた少なくとも1つ以上の本体吹出口4a～4dと本体吹出口9a～9dを備えた室内機である。

【0022】本体吹出口9a～9dは、室内機1aに設けられた本体吹出口4a～4dにさらに追加したものであり、好ましくは複数必要であるが、必要に応じて本体吹出口9a～9dのうち少なくとも1カ所は設けないことができ、また、本体吹出口4a～4dと本体吹出口9a～9dをつなげて1つの本体吹出口を設けたり、本体吹出口9a～9dのうち少なくとも1カ所は設けず封止し他の本体吹出口9a～9dと本体吹出口4a～4dをつなげた少なくとも1つの本体吹出口と少なくとも1つの封止部を設けることができる。

【0023】また、図3において、5aは室内機1aの下面に設けられた略四角形の化粧パネルであり、6は略四角形の化粧パネル5aの中央部に設けられた吸込口であり、7a～7dは略四角形の化粧パネル5aの周囲の4辺に設けられた主流のパネル吹出口であり、8a～8dは化粧パネル5aの4つのコーナー部であり、10a～10dは略四角形の化粧パネル5aの4つのコーナー部8a～8dに設けられた副流のパネル吹出口である。

【0024】副流のパネル吹出口10a～10dは、略四角形の化粧パネル5aの周囲の4辺に設けられた主流のパネル吹出口7a～7dにさらに追加したものである。

【0025】以上のように構成された空気調和機について、以下その動作を説明する。

【0026】まず、空気調和機により冷房運転や暖房運転を開始すると、室内空気が送風機3により吸込口6から吸い込まれる。さらに、熱交換器2により加熱された冷風や温風は、本体吹出口4a～4dから主流のパネル吹出口7a～7dを通じて室内へ吹き出されるばかりでなく、本体吹出口9a～9dからも副流のパネル吹出口10a～10dを通じて室内へ吹き出される。

【0027】ここで、室内機1aは最も一般的な略四角形の化粧パネルに4つの吹出口を備えたいわゆる従来の4方向吹出の空気調和機の室内機のコーナー部にさらに

本体吹出口9a~9dを設け、また、化粧パネル5aは従来の空気調和機の化粧パネルのコーナー部にさらに副流のパネル吹出口10a~10dを設けたものであるため、室内機1aと化粧パネル5aは、コーナー部8a~8d以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことなく、なおかつ、化粧パネル5aの4つのコーナー部8a~8dに備えた4つの副流のパネル吹出口10a~10dから吹出空気流が流れるので、化粧パネル5aのコーナー部8a~8dの方向の居住域領域に冷風や温風を流すことができる。

【0028】以上のように本実施の形態の空気調和機は、送風機3により吸い込まれ熱交換器2により熱交換された室内空気を吹き出す本体吹出口4a~4d、9a~9dを、筐体の外周に備えた室内機1aと、室内機1aの下面に設けられ、中央部に吸込口6、周囲の4辺にそれぞれ主流のパネル吹出口7a~7d、4つのコーナー部8a~8dにそれぞれ副流のパネル吹出口10a~10dが形成された略四角形の化粧パネル5aとから構成したものであり、化粧パネル5aのコーナー部8a~8dに形成された副流のパネル吹出口10a~10dから吹出空気流が流れるので、化粧パネル5aの4つのコーナー部8a~8dの方向の居住域領域に冷風や温風を流すことができる。

【0029】また、本実施の形態における室内機1aは、従来の一般的な4方向吹出の空気調和機の室内機のコーナー部にさらに本体吹出口9a~9dを設けることにより得ることができ、また、本実施の形態における化粧パネル5aは、従来の一般的な4方向吹出の空気調和機の化粧パネルのコーナー部8a~8dにさらにパネル吹出口10a~10dを設けることにより得ることができ、コーナー部以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことがない。

【0030】（実施の形態2）以下、本発明による空気調和機の実施の形態2について、図面を参照しながら説明する。なお、従来および実施の形態1と同一構成については、同一符号を付して詳細な説明を省略する。

【0031】本実施の形態における室内機の構成は、図1、図2に示された実施の形態1における室内機と同一である。図4は、本発明の実施の形態2による空気調和機の化粧パネルの平面図である。

【0032】図4において、5bは室内機1aの下面に設けられた略四角形の化粧パネルであり、6は略四角形の化粧パネル5bの中央部に設けられた吸込口であり、7a~7dは略四角形の化粧パネル5bの周囲の4辺に設けられた主流のパネル吹出口であり、10a~10cは略四角形の化粧パネル5bのコーナー部8a~8cに

設けられた副流のパネル吹出口である。副流のパネル吹出口10a~10cは、略四角形の化粧パネル5bの周囲の4辺に設けられた主流のパネル吹出口7a~7dにさらに少なくとも1つ（この図4の例では3つ）追加したものである。

【0033】以上のように構成された空気調和機について、以下その動作を説明する。

【0034】まず、空気調和機により冷房運転や暖房運転を開始すると、室内空気が送風機3により吸込口6から吸い込まれる。さらに、熱交換器2により加熱された冷風や温風は、本体吹出口4a~4dから主流のパネル吹出口7a~7dを通じて室内へ吹き出されるばかりでなく、本体吹出口9a~9cから副流のパネル吹出口10a~10cを通じて室内へ吹き出されるが、副流のパネル吹出口がないコーナー部8dからは吹出空気流が流れないので、室内機1aと化粧パネル5bは、コーナー部8a~8d以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことなく、なおかつ、化粧パネル5bの4つのコーナー部8a~8dのうち少なくとも1つのコーナー部に副流のパネル吹出口がないので、化粧パネル5bのコーナー部8a~8dの方向のうち不要な居住域領域に冷風や温風が流れず、他のコーナー部に備えた副流のパネル吹出口から必要な居住域領域に冷風や温風が流すことができる。

【0035】以上のように本実施の形態の空気調和機は、送風機3により吸い込まれ熱交換器2により熱交換された室内空気を吹き出す本体吹出口4a~4d、9a~9cを、筐体の外周に備えた室内機1aと、室内機1aの下面に設けられ、中央部に吸込口6、周囲の4辺にそれぞれ主流のパネル吹出口7a~7d、4つのコーナー部8a~8dのうちの3つのコーナー部8a~8cにそれぞれ副流のパネル吹出口10a~10cが形成された略四角形の化粧パネル5bとから構成したものであり、化粧パネル5bの3つのコーナー部8a~8cに形成された副流のパネル吹出口10a~10cから吹出空気流が流れるので、化粧パネル5bの4つのコーナー部8a~8dのうち3つのコーナー部8a~8cの方向の吹出空気流を流す必要がある居住域領域に冷風や温風を流すことができる。

【0036】また、熱交換器2の構成上の都合で他のコーナー部8a~8cに比べて吹出空気流が流れ難い方向の化粧パネル5bのコーナー部8dに、最初から副流のパネル吹出口を形成しないようにすることにより、特定の副流のパネル吹出口からの吹出空気流が弱いと利用者に余計な不満を与えることがない。

【0037】また、副流のパネル吹出口がない化粧パネル5bのコーナー部8dの方向を、空気調和機の設置環境や居住域領域の関係で吹出空気流を流す必要のない方向にあわせて化粧パネル5bを設置することにより、無

駄な空調を無くすとともに、副流のパネル吹出口を無くした分を吹出空気流を流す必要がある居住域領域に有効に吹出空気流を流すことができる。

【0038】また、本実施の形態における室内機1aは、従来の一般的な4方向吹出の空気調和機の室内機のコーナー部にさらに本体吹出口9a~9dを設けることにより得ることができ、また、本実施の形態における化粧パネル5bは、従来の一般的な4方向吹出の空気調和機の化粧パネルの3つのコーナー部8a~8cにさらにパネル吹出口10a~10cを設けることにより得ることができ、コーナー部以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことがない。

【0039】（実施の形態3）以下、本発明による空気調和機の実施の形態3について、図面を参照しながら説明する。なお、従来および実施の形態1、2と同一構成については、同一符号を付して詳細な説明を省略する。

【0040】本実施の形態における室内機の構成は、図1、図2に示された実施の形態1における室内機と同一である。図5は、本発明の実施の形態3による空気調和機の化粧パネルの平面図である。

【0041】図5において、5cは室内機1aの下面に設けられた略四角形の化粧パネルであり、6は略四角形の化粧パネル5cの中央部に設けられた吸込口であり、7a~7dは略四角形の化粧パネル5cの周囲の4辺に設けられた主流のパネル吹出口である。

【0042】11a~11cは、略四角形の化粧パネル5cのコーナー部8a~8cに設けられた着脱自在な副流のパネル吹出口があるカバーであり、11dは、略四角形の化粧パネル5cのコーナー部8dに設けられた着脱自在な副流のパネル吹出口がないカバーである。

【0043】着脱自在な副流のパネル吹出口があるカバー11a~11cは、略四角形の化粧パネル5cの周囲の4辺に設けられた主流のパネル吹出口7a~7dにさらに少なくとも1つ追加したものであり、着脱自在な副流のパネル吹出口がないカバー11dは、略四角形の化粧パネル5cの周囲の4辺に設けられた主流のパネル吹出口7a~7dにさらに少なくとも1つ追加したものである。

【0044】以上のように構成された空気調和機について、以下その動作を説明する。

【0045】まず、空気調和機により冷房運転や暖房運転を開始すると、室内空気が送風機3により吸込口6から吸い込まれる。さらに、熱交換器2により加熱された冷風や温風は、本体吹出口4a~4dから主流のパネル吹出口7a~7dを通じて室内へ吹き出されるばかりでなく、本体吹出口9a~9cから着脱自在な副流のパネル吹出口があるカバー11a~11cを通じて室内へ吹き出される。

【0046】このとき、着脱自在な副流のパネル吹出口がないカバー11dが設けられたコーナー部8dからは吹出空気流が流れない。

【0047】室内機1aと化粧パネル5cは、コーナー部8a~8d以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことなく、なおかつ、化粧パネル5cの4つのコーナー部8a~8dのうち温調の不要な居住域領域には、着脱自在な副流のパネル吹出口がないカバー11dを取り付けることにより、冷風や温風を流さず、化粧パネル5cの4つのコーナー部8a~8dのうち温調の必要な居住域領域には、着脱自在な副流のパネル吹出口があるカバー11a~11cを取り付けることにより冷風や温風を流すことができ、居住域領域の負荷変動に応じて着脱自在に変更し吹き分け可能にすることができる。

【0048】以上のように本実施の形態の空気調和機は、送風機3により吸い込まれ熱交換器2により熱交換された室内空気を吹き出す本体吹出口4a~4d、9a~9dを、筐体の外周に備えた室内機1aと、室内機1aの下面に設けられ、中央部に吸込口6、周囲の4辺にそれぞれ主流のパネル吹出口7a~7dが形成され、4つのコーナー部8a~8dに副流のパネル吹出口がないカバー11dまたは副流のパネル吹出口があるカバー11a~11cのどちらか一方のカバーが着脱自在に取り付けられる略四角形の化粧パネル5cとから構成したものであり、実施の形態2の効果に加え、化粧パネル5cの4つのコーナー部8a~8dのそれぞれに対し、副流のパネル吹出口を設けるか設けないかの選択、変更、副流のパネル吹出口の増減が容易に行え、空気調和機の設置後の居住域環境の変化、季節の変化による空調負荷変動にも柔軟に対応できる。

【0049】

【発明の効果】以上説明したように請求項1記載の発明は、送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、前記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口、4つのコーナー部にそれぞれ副流のパネル吹出口が形成された略四角形の化粧パネルとから構成したことにより、化粧パネルの4つのコーナー部の方向の居住域領域に冷風や温風を流すことができる。

【0050】また、コーナー部以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、低コストで製造可能で、安価にユーザーに提供でき、従来の4方向吹出の空気調和機の持つ施工面やデザイン面の汎用性を損なうことがない。

【0051】また、請求項2記載の発明は、送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、前



記室内機の下面に設けられ、中央部に吸込口、周囲の4辺にそれぞれ主流のパネル吹出口、4つのコーナー部のうち多くとも3つのコーナー部にそれぞれ副流のパネル吹出口が形成された略四角形の化粧パネルとから構成したことにより、化粧パネルの4つのコーナー部のうち最大3つのコーナー部の方向の吹出空気流を流す必要がある居住域領域に冷風や温風を流すことができる。

【0052】また、熱交換器の構成上の都合で他のコーナー部に比べて吹出空気流が流れ難い方向の化粧パネルのコーナー部に、最初から副流のパネル吹出口を形成しないようにすることにより、特定の副流のパネル吹出口からの吹出空気流が弱いと利用者に余計な不満を与えることがない。

【0053】また、副流のパネル吹出口がない化粧パネルのコーナー部の方向を、空気調和機の設置環境や居住域領域の関係で吹出空気流を流す必要のない方向にあわせて化粧パネルを設置することにより、無駄な空調を無くすとともに、副流のパネル吹出口を無くした分を吹出空気流を流す必要がある居住域領域に有効に吹出空気流を流すことができる。

【0054】また、コーナー部以外は、従来の4方向吹出の空気調和機と基本形状を兼用可能であり、低コストで製造可能で、安価にユーザーに提供でき、従来の4方向吹出の空気調和機を持つ施工面やデザイン面の汎用性を損なうことがない。

【0055】また、請求項3記載の発明は、送風機により吸い込まれ熱交換器により熱交換された室内空気を吹き出す本体吹出口を、筐体の外周に備えた室内機と、前記室内機の下面に設けられ、中央部に吸込口、周囲の4

\* 着脱自在に取り付けられる略四角形の化粧パネルとから構成したことにより、請求項2の発明の効果に加え、化粧パネルの4つのコーナー部のそれぞれに対し、副流のパネル吹出口を設けるか設けないかの選択、変更、副流のパネル吹出口の増減が容易に行え、空気調和機の設置後の居住域環境の変化、季節の変化による空調負荷変動にも柔軟に対応できる。

【図面の簡単な説明】

【図1】本発明の実施の形態1による空気調和機の室内機の底面図

【図2】同実施の形態の空気調和機の室内機の縦断面図

【図3】同実施の形態の空気調和機の化粧パネルの平面図

【図4】本発明の実施の形態2による空気調和機の化粧パネルの平面図

【図5】本発明の実施の形態3による空気調和機の化粧パネルの平面図

【図6】従来の空気調和機の室内機の底面図

【図7】同従来の空気調和機の室内機の縦断面図

【図8】同従来の空気調和機の化粧パネルの平面図

【符号の説明】

1 a 室内機

2 熱交換器

3 送風機

4 a, 4 b, 4 c, 4 d 本体吹出口

5 a, 5 b, 5 c 化粧パネル

6 吸込口

7 a, 7 b, 7 c, 7 d 主流のパネル吹出口

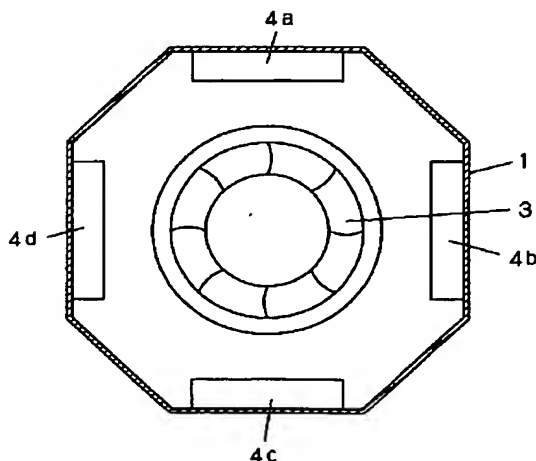
9 a, 9 b, 9 c, 9 d 本体吹出口

10 a, 10 b, 10 c, 10 d 副流のパネル吹出口

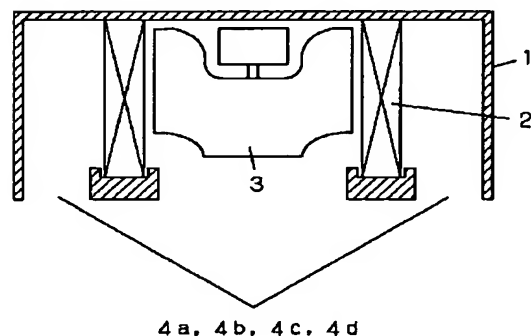
11 a, 11 b, 11 c 副流の吹出口があるカバー

11 d 副流の吹出口がないカバー

【図6】

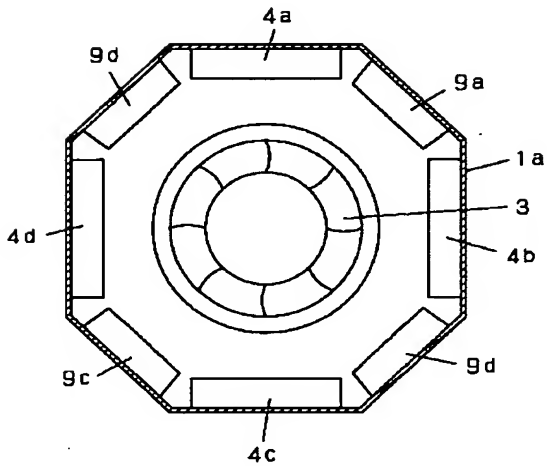


【図7】



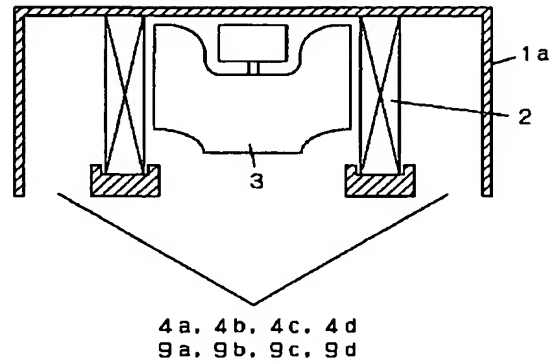
【図1】

1 a 室内機  
3 送風機  
4 a, 4 b, 4 c, 4 d, 9 a, 9 b, 9 c, 9 d 本体吹出口



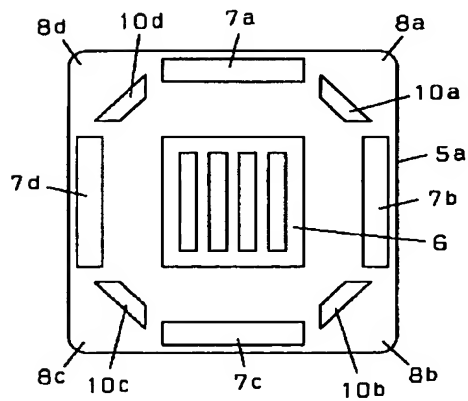
【図2】

2 熱交換器



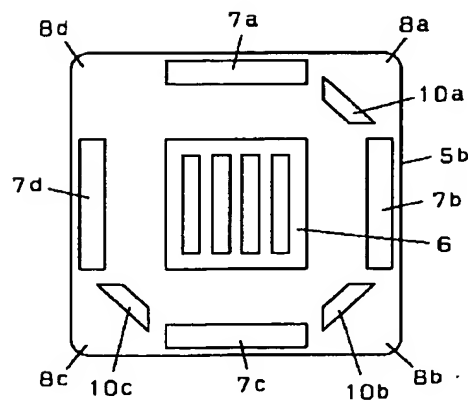
【図3】

5 a 化粧パネル  
6 吸込口  
7 a, 7 b, 7 c, 7 d 主流のパネル吹出口  
10 a, 10 b, 10 c, 10 d 副流のパネル吹出口



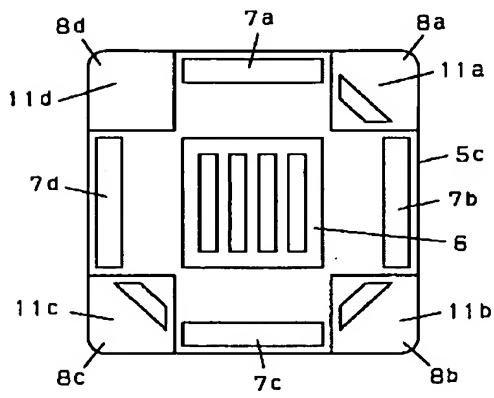
【図4】

5 b 化粧パネル

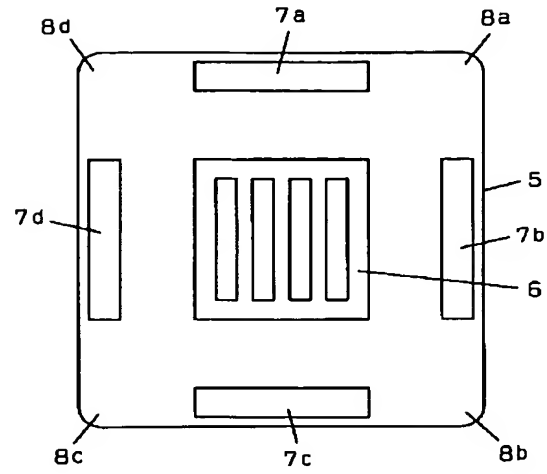


【図5】

5c 化粧パネル  
 11a, 11b, 11c 着脱自在な副流の吹出口があるカバー  
 11d 着脱自在な副流の吹出口がないカバー



【図8】



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